



DOMINION 400 MILE/YEAR UNDERGROUNDING PROJECT

History of Large Projects

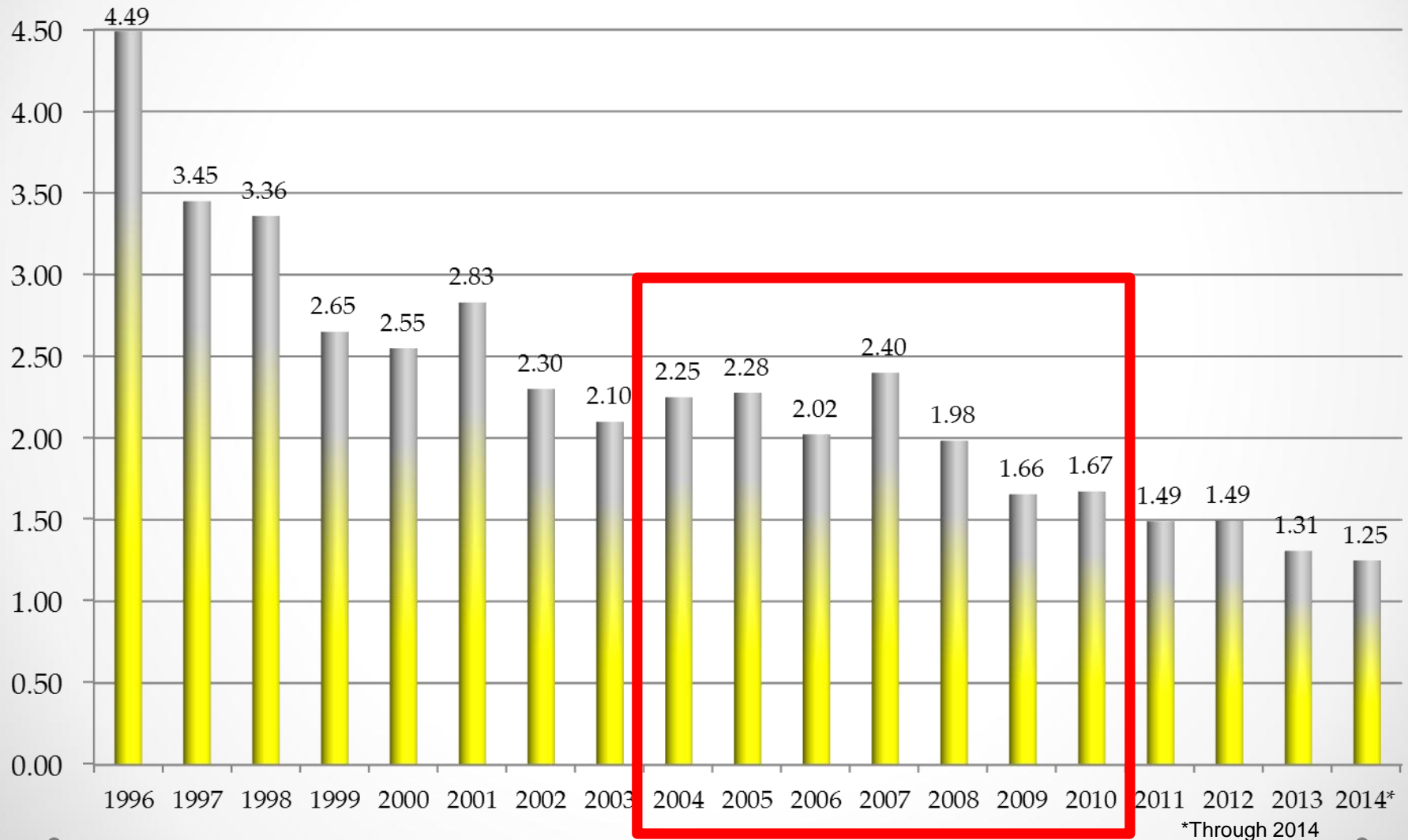
- Large scale non-pipeline projects impact pipeline and public safety
- Telecommunications
 - Fiber To The Premise (FTTP)
- Municipal Projects
 - Prentis Park (large water and sewer renewal project)
 - Charlottesville (large water and Sewer renewal project)

FTTP Background Information

- Large scale Verizon fiber project (parallel build)
- 2004 launch date
- 2005: 37 gas damages (247 non-gas) in one month!
- 598.45 Miles/3,159,824 Feet of FTTP cable placed in 2010 alone
- Cumulative Damages for 2010: 18 gas (59 non-gas)

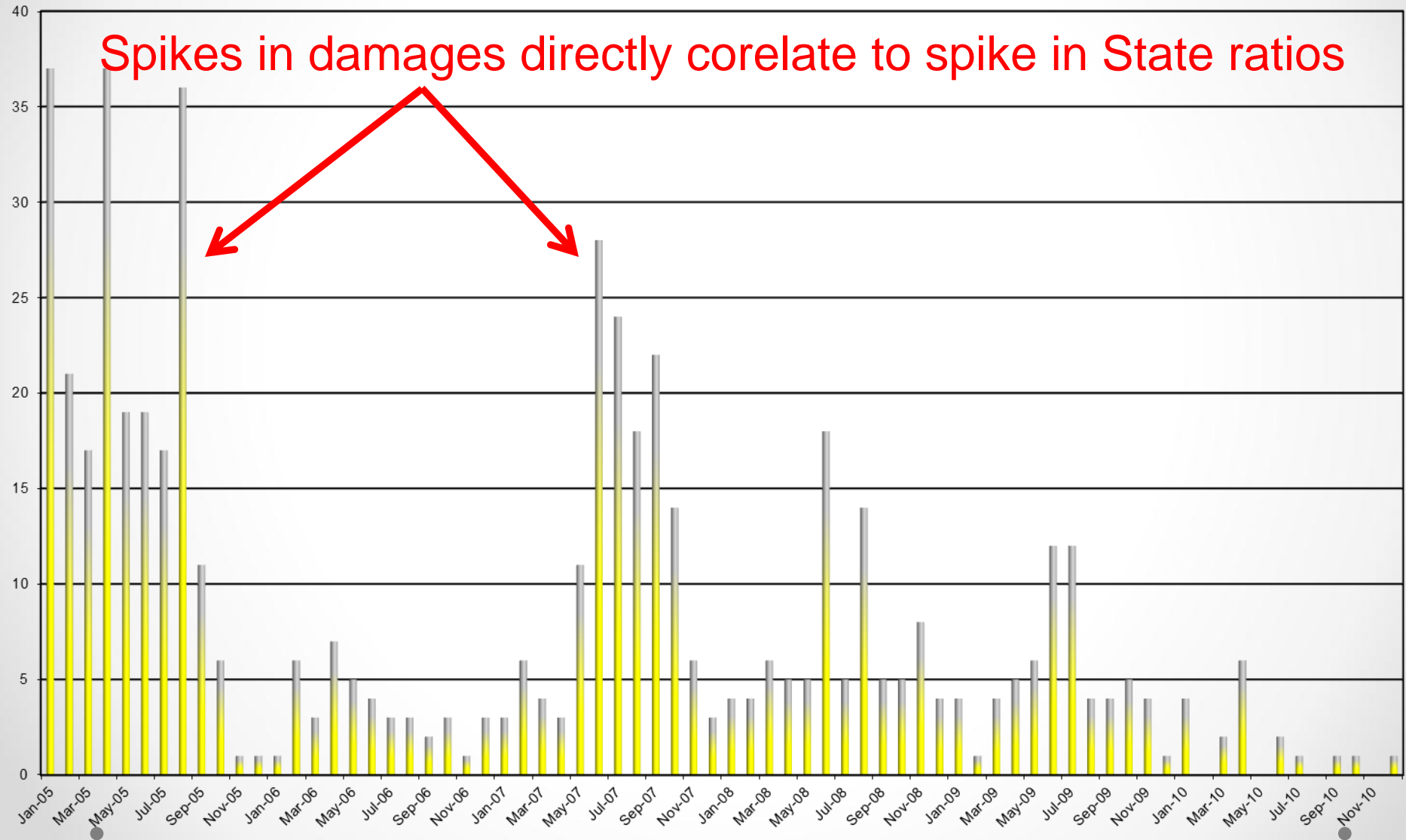
Virginia's Program Results

Gas Damages per 1,000 Gas Tickets



Reported FTTP Gas Damages By Month 2005 - 2010

Spikes in damages directly correlate to spike in State ratios





Directional bore crew drilling
in FTTP damages a 6" facility





Crew fails to spot gas facility while performing FTTP installation

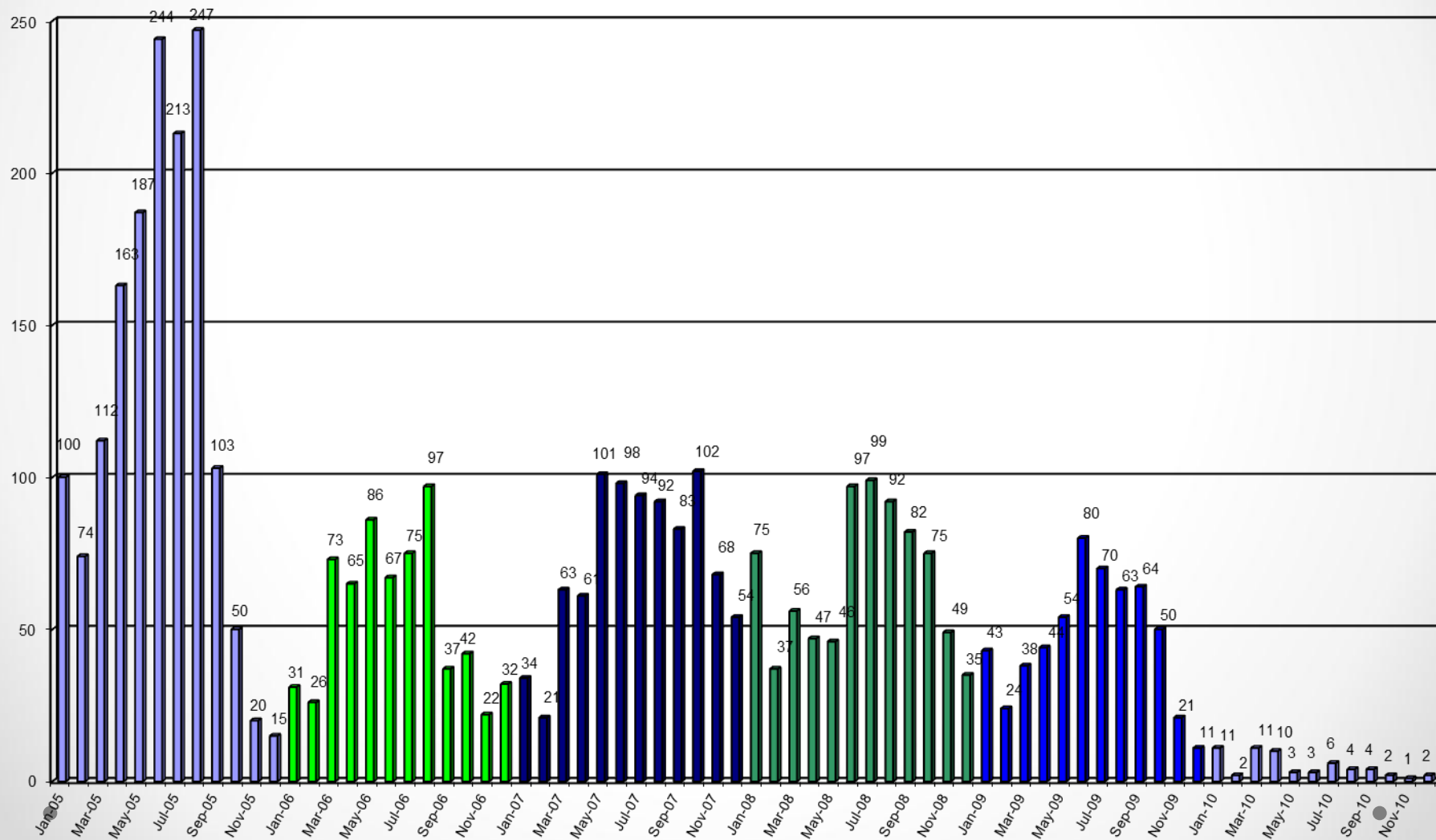


Improper separation,
damage to gas facility,
and multiple other
utilities



Total FTTP Damages

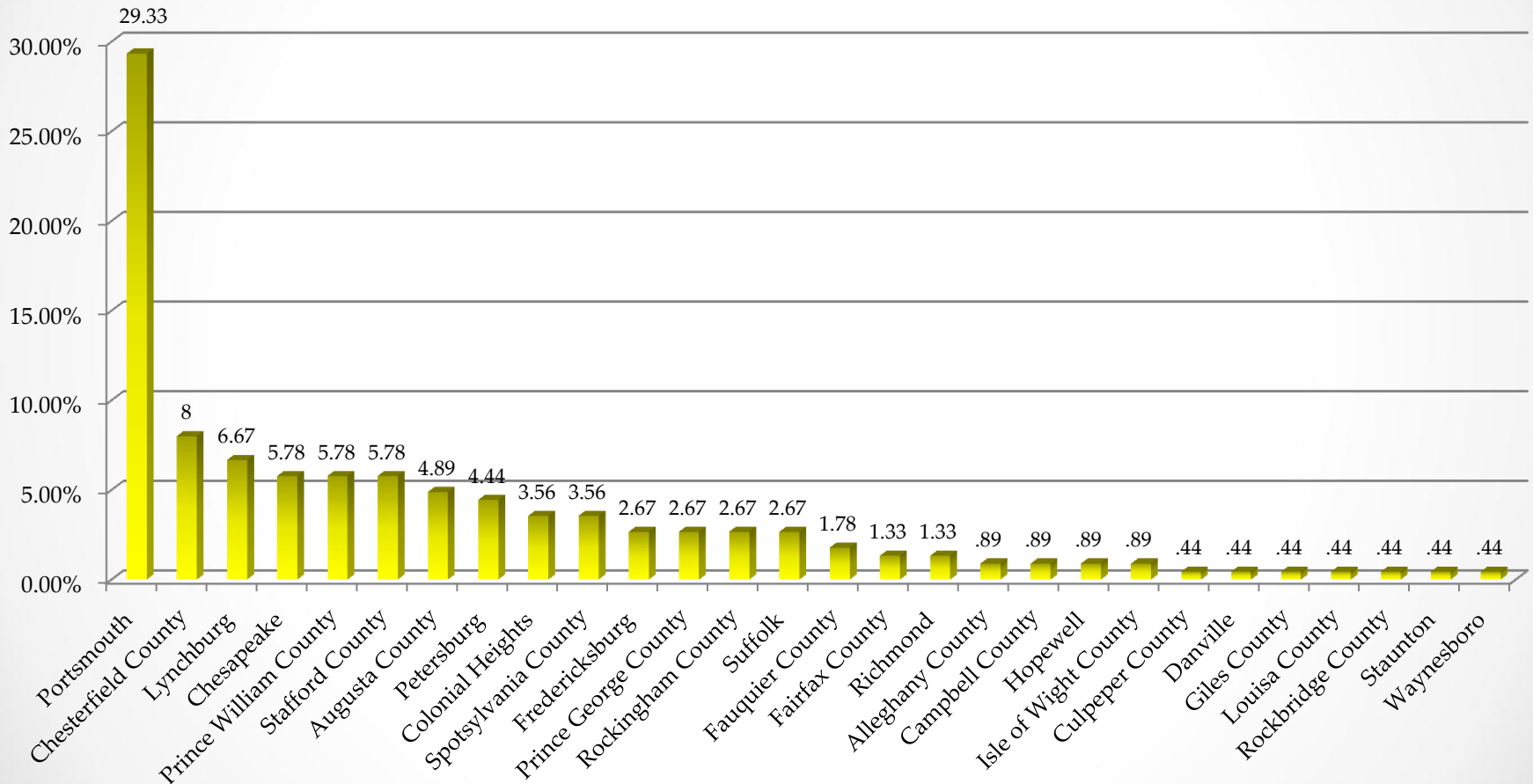
Source: Verizon



Prentis Park 2010

- City of Portsmouth water and sewer renewal project
- Project in an older section
- 2 Primes
- A third Party was hired to perform inspections & QA/QC
- Subsidized project

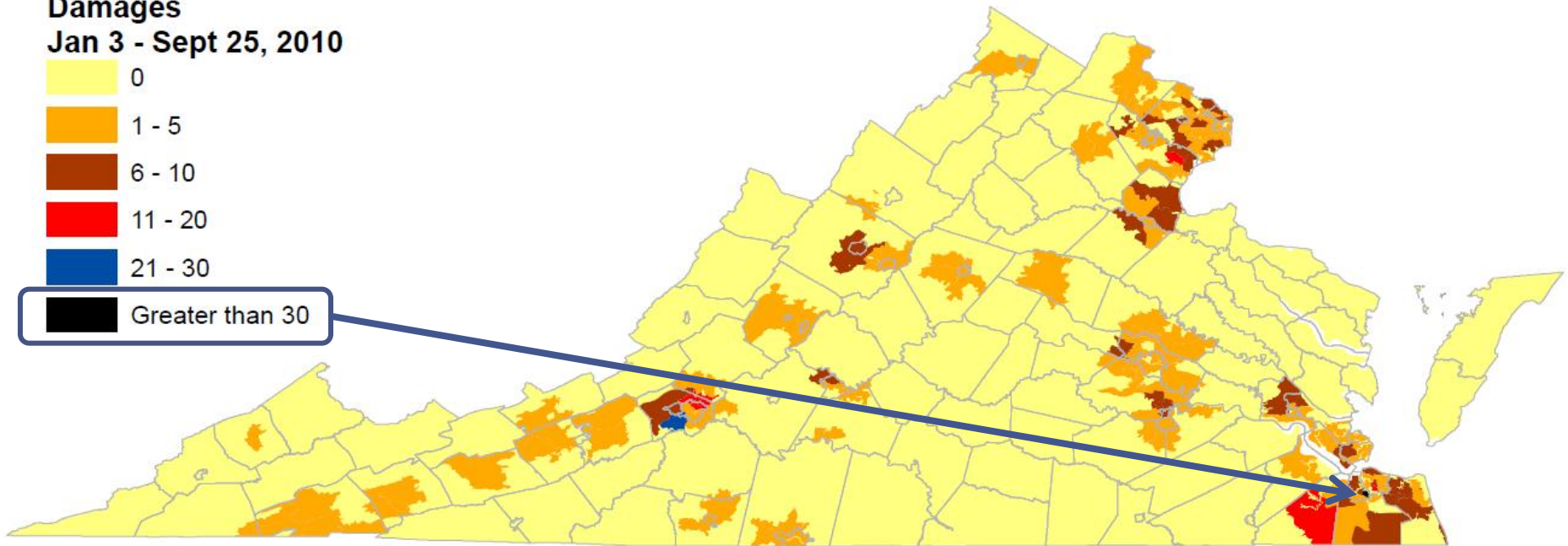
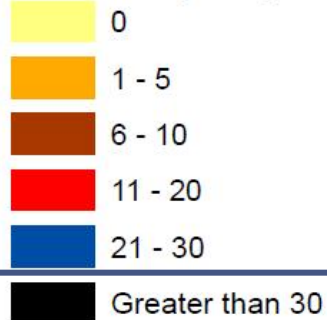
2010 CGV Damages by Jurisdiction



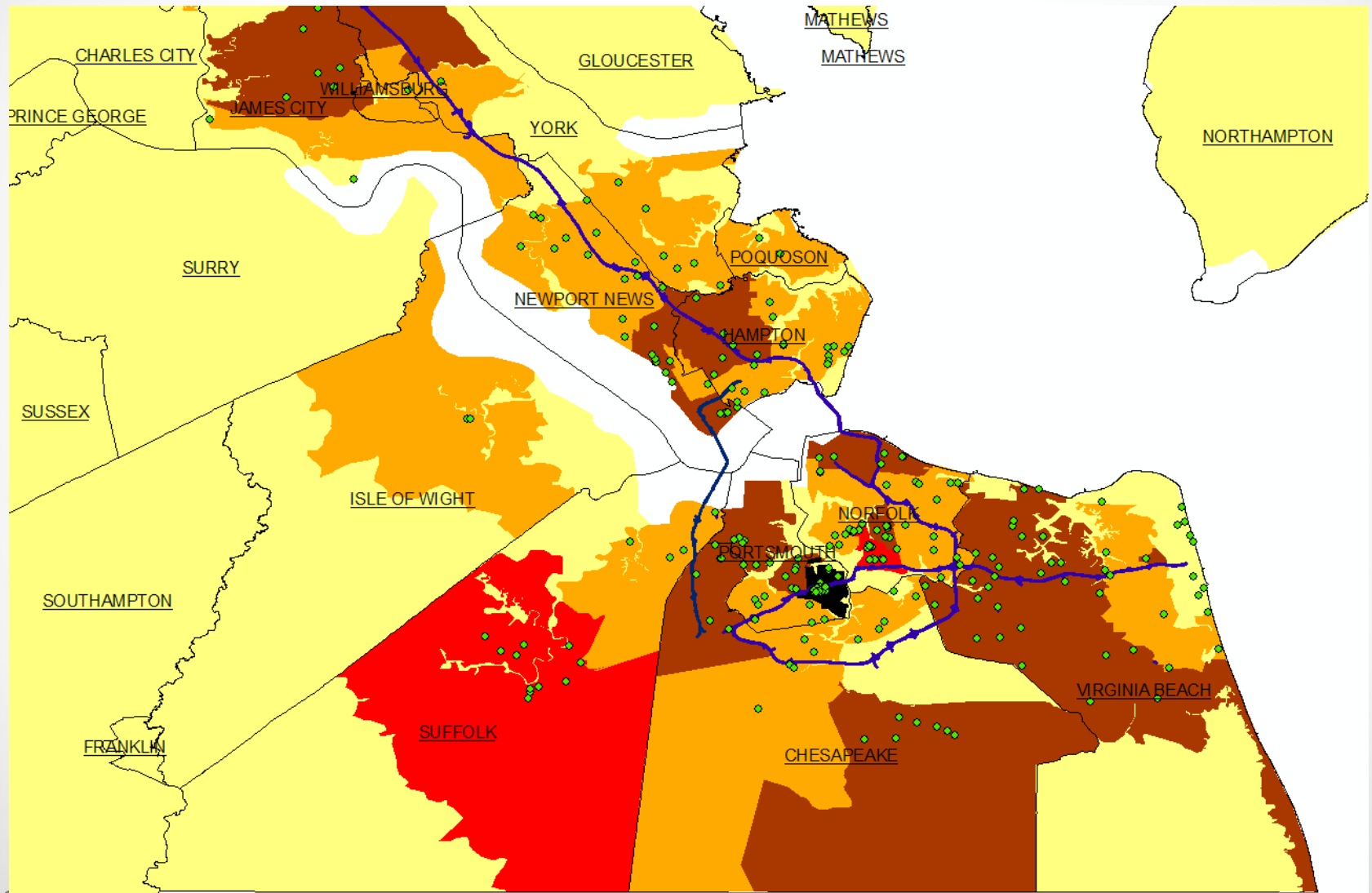
● Total Damages for CGV: 224 (66 in Portsmouth) ●

CGV Statewide Gas Damage Locations

Damages
Jan 3 - Sept 25, 2010

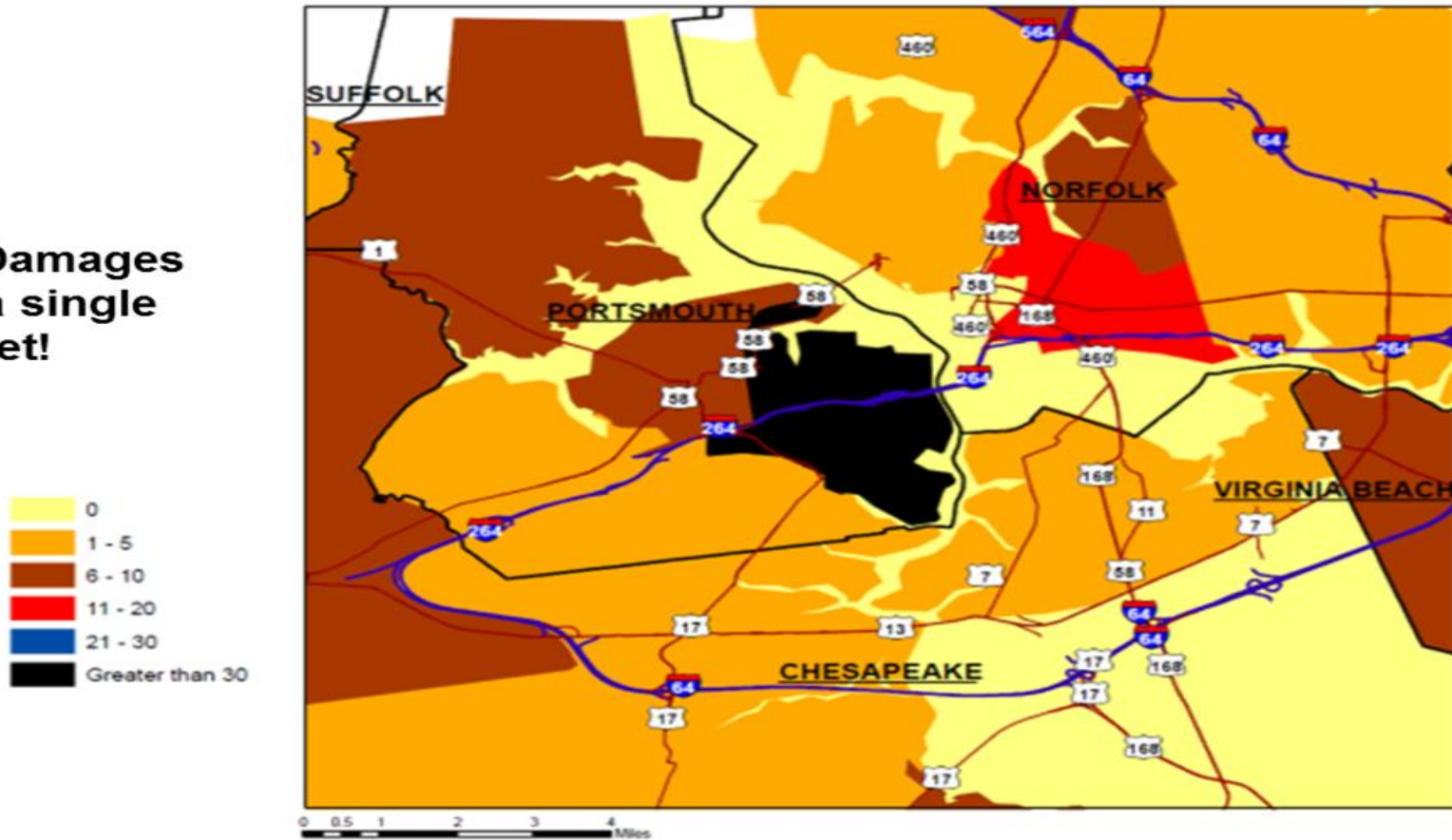


Prentis Park 2010

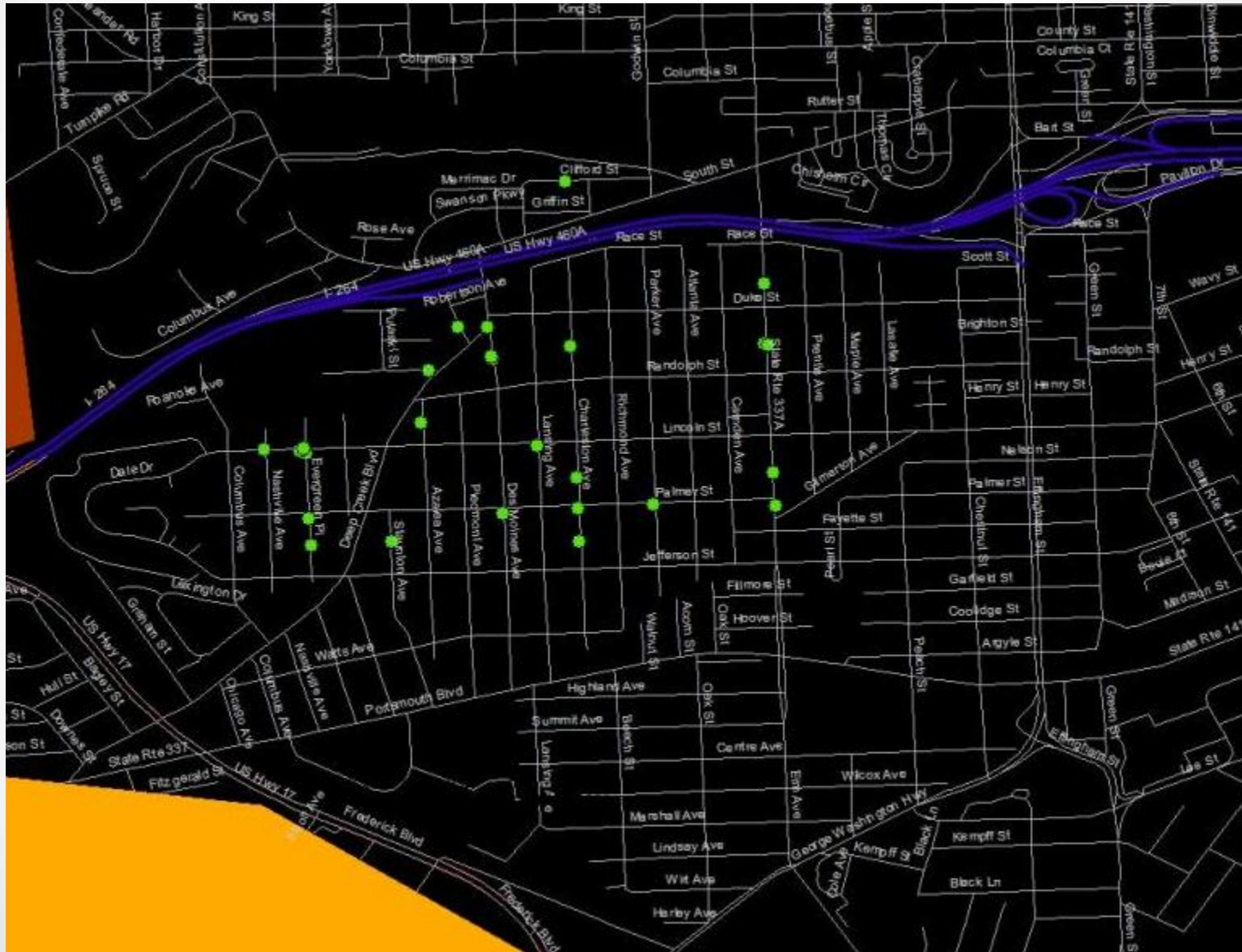


A Closer Look

10 Damages
on a single
street!

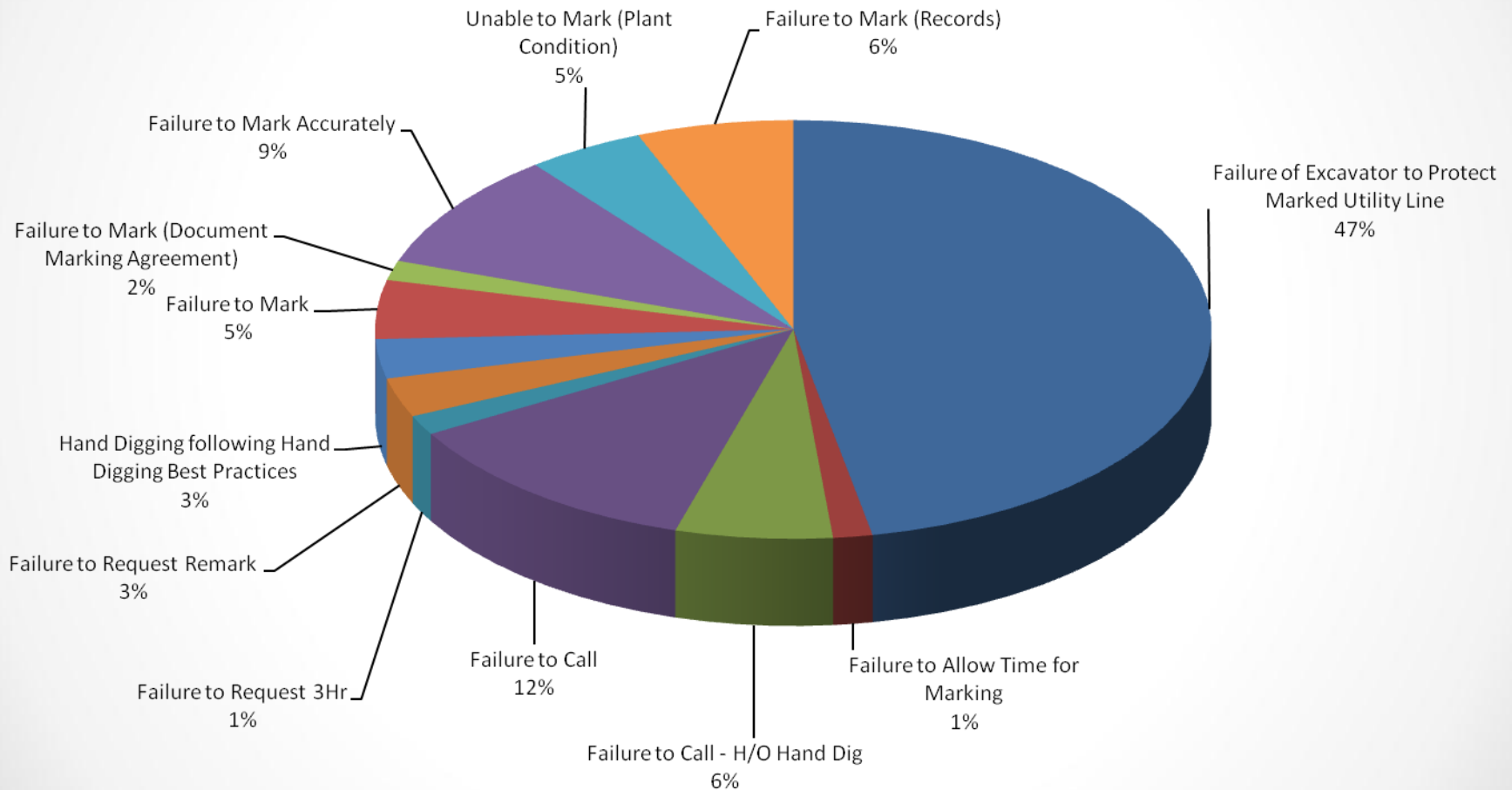


Inside the “Black Hole”

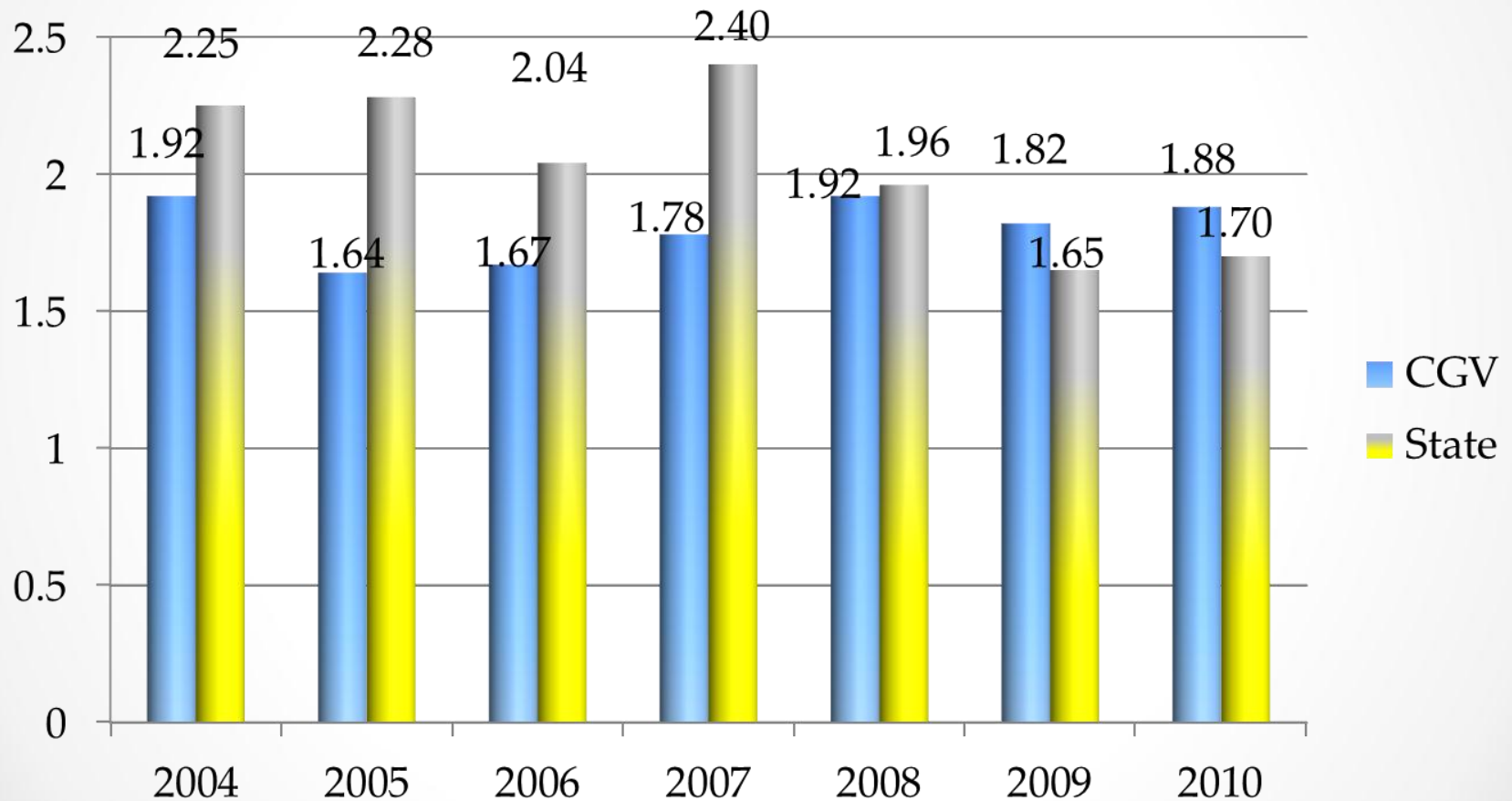


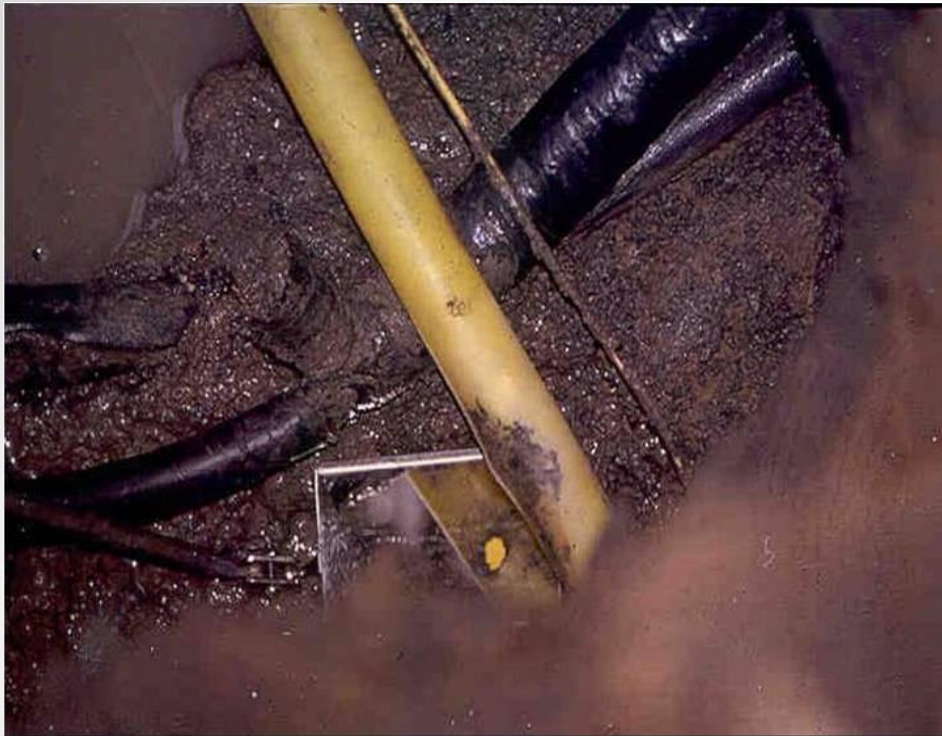
2010 Portsmouth

Damage Cause Distribution



Damages per 1000 Gas Tickets









Another Municipal Example

- Contractor working for the water and sewer side was cutting gas lines
- 11 damages = about 30% of total damages to that system for the year
- Stop work order issued
- Utility Protection Plan was developed and implemented before the stop work order was lifted

Lessons Learned

- Excavator education
 - Out of state and unlicensed contractors
- Excavator supervision
 - By prime and owner
- Owner simply contractual 'wrote away' responsibilities
- Can not wait for damages to pile up before issues are addressed
- **Safety Culture!**

Mitigation of Issues

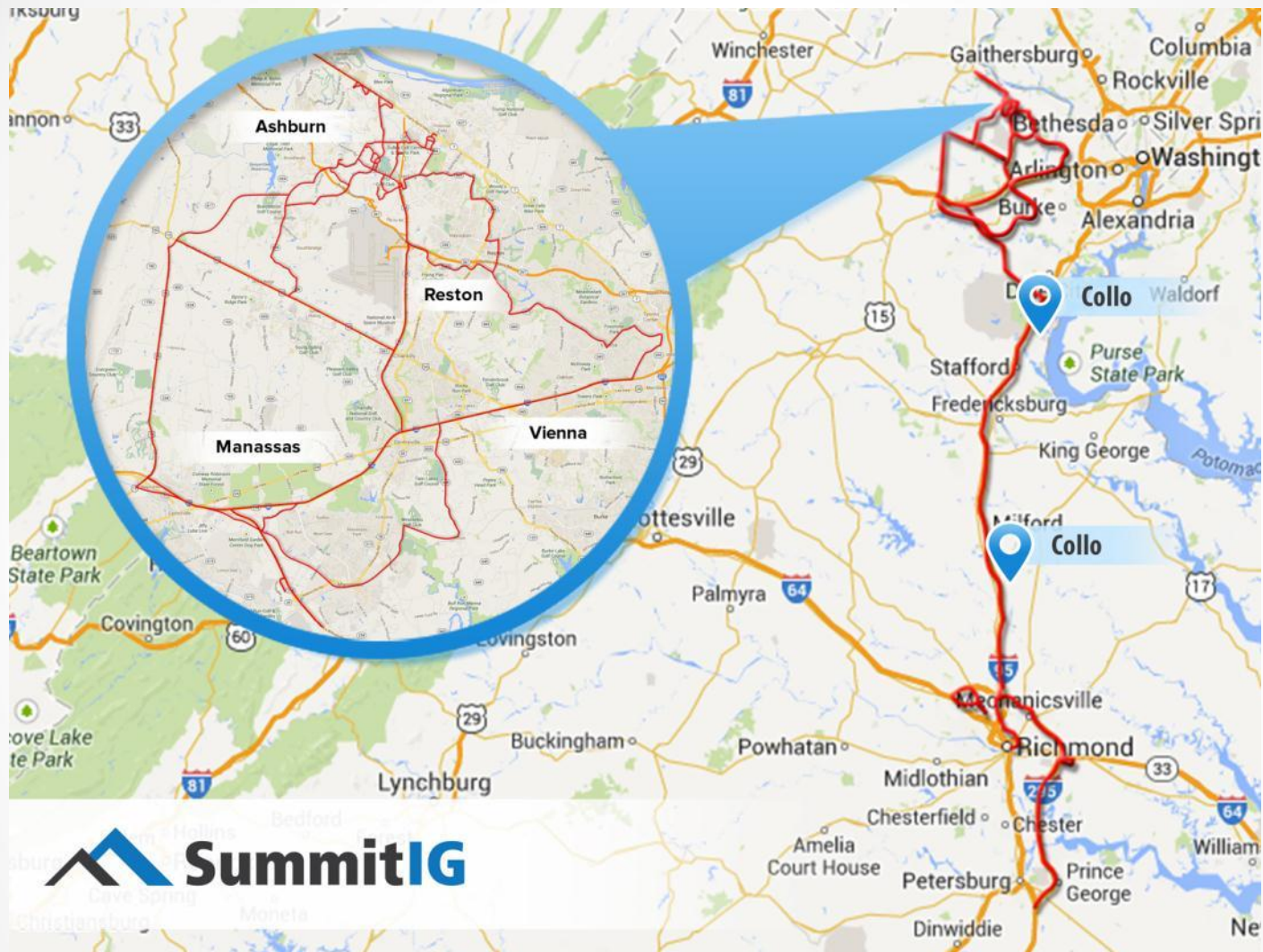
- 192.614 C. 6.
- DIMP / IMP
- RP1162

Proactive vs Reactive

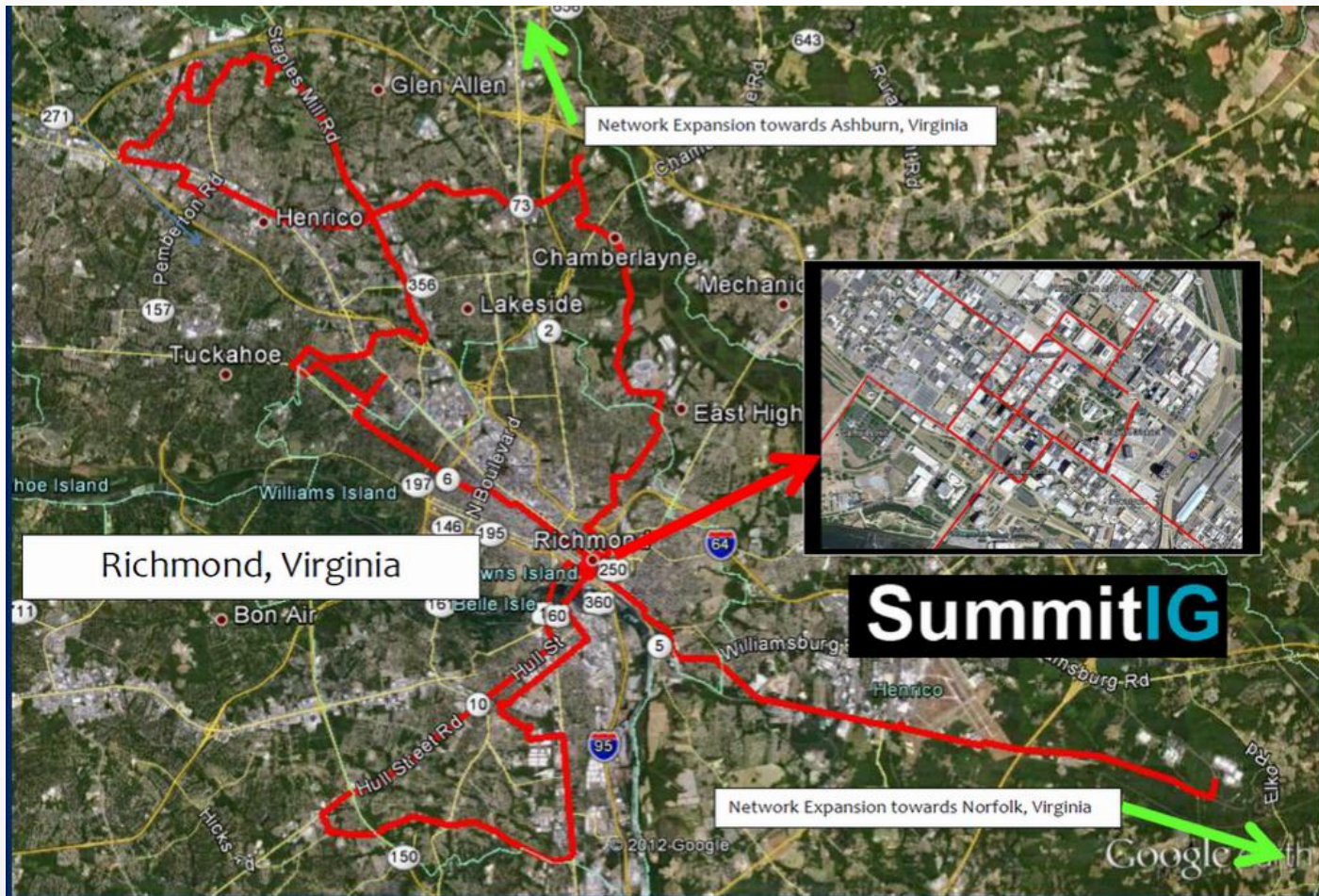
Applying those lessons...

Summit IG

- Large scale 'dark fiber' project and establishment of a new fiber optic network.
- Project encompassed 157.50 miles
 - Ashburn VA to Petersburg
- Project encompassed 32.89 miles
 - Ashburn to Haymarket/Manassas
- Up to 37 crews with 3 prime contractors
- 30 drills crews simultaneously



Richmond Fiber Ring





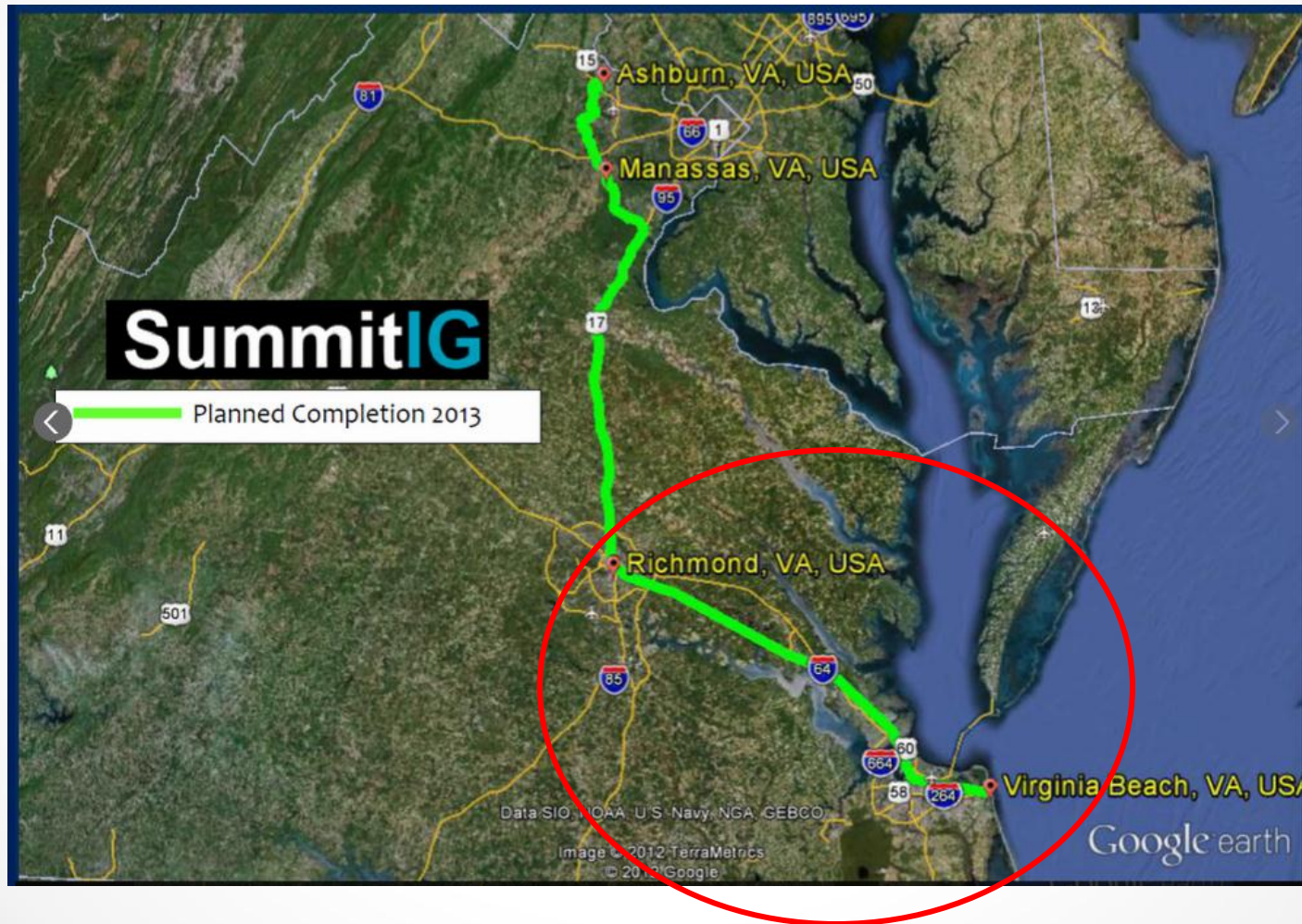
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Future Construction to VA Beach



Zero Damages to Gas
Facilities to Date on this
Project!

Keys to Success

- Owner engagement prior to project kick off
- Primes were not only trained but all key personnel
- were trained.
- As out of state subs and new stakeholders came aboard
- owner and primes made new crews get trained
- Owner and prime engaged in QA/QC activities
- Owner instilled Safety Culture from top down

Online Training

- Virginia specific online training modules
- Online directional drill training



Strategic Undergrounding

**Dominion Virginia Power
October, 2014**



Dominion®

Current State

- ❑ 58,000 miles of distribution lines
 - About one-third underground now
 - Over half of overhead system consists of tap lines
 - Prohibitively expensive to put all lines underground

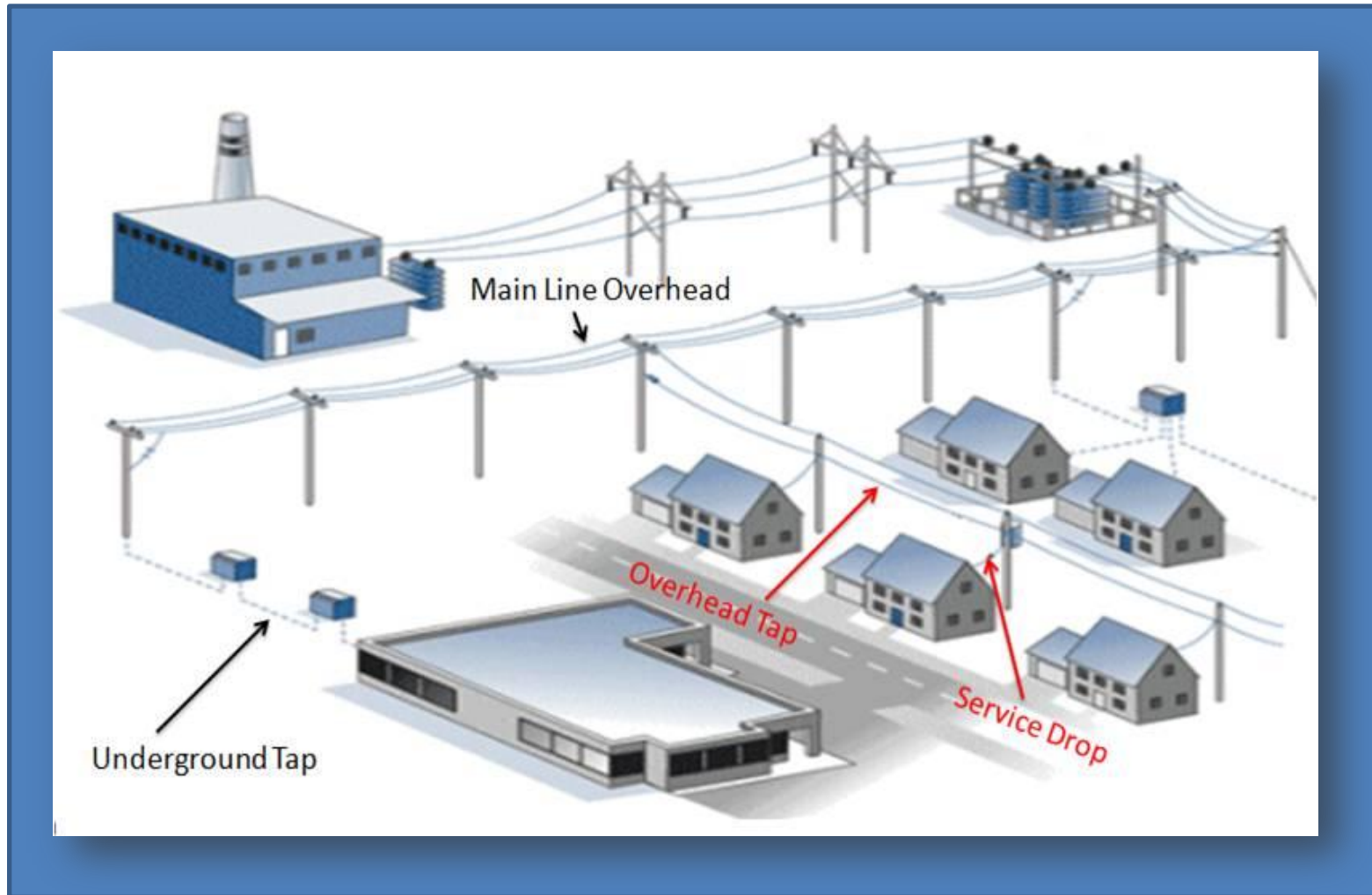


Why now....

- ❑ A Dominion initiative in response to customers' asking for more undergrounding
- ❑ A new approach to an old problem: selective, strategic undergrounding
- ❑ Bi-partisan, near-unanimous votes in favor of the law in both the House of Delegates (HB 848) and the Virginia Senate (SB 585)
- ❑ Signed by the governor on April 3, 2014
- ❑ Effective July 1, 2014
- ❑ Enables a utility to spend up to 5% of its distribution rate base per year to bury existing overhead distribution lines
- ❑ Requires State Corporation Commission oversight of implementation



Our Plan



Strategic Underground Program

- ❑ Improve the system's reliability by undergrounding the most **outage-prone** distribution tap lines in our system
 - Utilize 10 year outage history to identify tap lines
 - Conduct work in all regions of our service area



Benefits

- ❑ Fewer repairs needed after storm to restore power
 - Crews concentrate where outages are occurring
- ❑ Faster restoration after a storm
 - Outages will still occur, but life returns to normal more quickly for homes and businesses
- ❑ Each project benefits customers
 - Burying the most vulnerable lines will increase reliability for customers as a whole
- ❑ Improved communications during restorations



Damage Prevention

☐ Heightened Awareness Program

- CBT
- Information Sharing
- Risk Based Assessment
- Operator Outreach
- LDPC Town Hall's



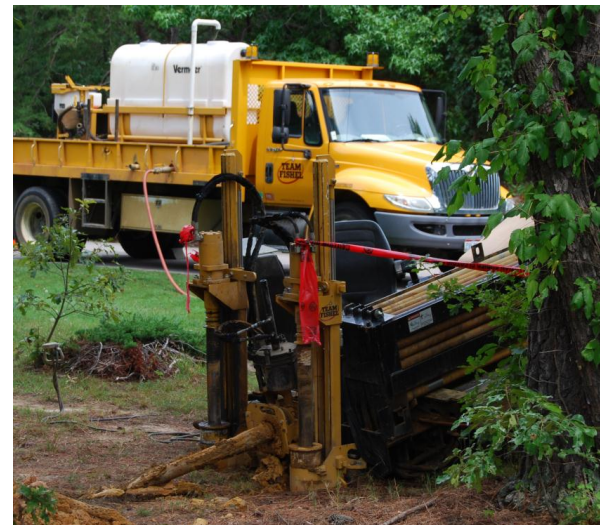
How we plan to proceed

- ❑ Use a fair, data-driven process to select projects from throughout our service area
 - 2014 & 2015: Ramp up period
 - 2015: Evaluation of contractors
 - 2016 to 2025: ~350 miles per year



Customer service

- ❑ Success depends on gaining approval of property owners
 - Easements required for primary placement
 - Intention is for service drops to also be underground, easement not required
- ❑ Property owners and neighborhood organizations will be advised on what to expect
- ❑ Reach out to telephone and CATV companies to create joint undergrounding projects
- ❑ Planning leads to effective execution



Some of the Challenges

- Time and resource allocation
 - What areas?
 - What impact?
 - Scope and pace of the project?
 - What will the impact be on available personnel

Some of the Challenges

- Effective communication
 - Who are the players?
 - Who are the key contacts?
 - How to resolve issues / concerns?
 - How can additional information be obtained / updated?

Some of the Challenges

- Training
 - How many layers?
 - How are they trained?
- QA/QC and Oversight

Discussion

*Andy Brooks, Dominion,
Carl Zatkulak, Dominion,
Dan Cote, CGV,
Mel Huey, WGL,
Scott Marshall, URS*

